

Balata, *Mimusops globosa*, and of the imported timber trees, Honduras mahogany and African mahogany, *Kasya senegalensis*, are growing freely

FOR the forthcoming new edition of the "Imperial Gazetteer of India," Sir J. D. Hooker has written a chapter on the flora of India, which is prefaced by an introductory summary. With the authority of the Secretary of State for India, this chapter has been issued in an advanced form, and the summary is reprinted in the *Journal of Botany* (August). In the same number an account will be found of certain changes which will be proposed at the forthcoming congress of botanists to be held at Vienna in June, 1905, in connection with the rules which govern botanical nomenclature. The three lists of suggestions here given take the form of alterations in, or additions to, the Paris code, and have been drafted respectively by British botanists of the British Museum, American botanists of the Gray Herbarium, and a group of Italian botanists.

THE latest addition to the Manuelli Hoepli is a handbook dealing with artisan dwellings, by the engineer Effren Magrini, of Turin. In the same series Dr. Guido Sandrinelli has issued a new and completely revised edition of the manual of the late Pietro Gallizia on strength of materials and applied elasticity. It deals with calculations of strains and stresses in beams and other structures, and allied problems of use to the practical engineer.

No. 5 of the *Bulletin* of the Belgium Academy of Sciences contains an account by A. de Hemptinne of a remarkable electrolytic synthesis of stearic acid from oleic acid. This acid, when subjected in an atmosphere of hydrogen to the discharge of a Tesla transformer, combines with the gas to form principally stearic acid. In No. 6 of the *Bulletin* is a description of the preparation and properties of a number of fluorine-substituted amines. These substances are remarkable because of their extraordinary stability as compared with the corresponding chloro- and bromo-derivatives, which, as a rule, decompose rapidly at the ordinary temperature.

To the *Smithsonian Miscellaneous Collections* (vol. xlv., parts iii. and iv.) Prof. F. A. Lucas contributes an account of a nearly perfect skeleton of a pavement-toothed iguanodon (*Trachodon* or *Claosaurus*). The edentulous prementary and premandibular bones of the iguanodont dinosaurs are considered by the author to have been sheathed in horn, and thus to have formed a beak adapted for nipping off the branches or herbage on which these reptiles fed. Among other contributors to the same part are also Messrs. Jordan and Snyder, who describe several new deep-water fishes from Japan. These include a shark of the genus *Pristiurus*, as well as one of *Pseudotriacis*, and likewise a new genus, *Trismegistus*, allied to *Liparis*. *Trismegistus owstoni*, as the third of these new species is called, is certainly a very remarkable fish, somewhat like a sole in shape, although, of course, bilaterally symmetrical, with the skin dotted with prickles supported on broad bases, so as to recall inverted drawing-pins.

In the August number of the *American Journal of Science* Mr. Bertram B. Boltwood records observations which indicate that the quantities of radium present in several uranium minerals, which have been examined, are directly proportional to the quantities of uranium contained in the minerals. This is perhaps to be regarded as experimental evidence in favour of the suggestion that radium is formed by the breaking down of the uranium atom.

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IN the August issue of the *Annales de Chimie et de Physique* is a contribution by Messrs. Moissan and Rigaut on the use of metallic calcium in the preparation of argon. It is shown that the last traces of nitrogen, which are not so easily removed by a heated mixture of lime and metallic magnesium, are readily absorbed by passage of the gas over a small quantity of metallic calcium. An apparatus is described in which argon can be continuously produced at the rate of a litre every twelve hours.

SOME interesting experiments relating to the electrolytic reduction of carbonic acid are described by Messrs. Coehn and Jahn in the *Berichte der deutschen chemischen Gesellschaft* (vol. xxxvii. p. 2836). The reduction cannot be effected in acid solutions or in solutions containing the normal carbonates, but takes place readily in bicarbonate solutions. From this the authors conclude that the reducing action is limited to the bicarbonate ion, and that the carbonate ion and the undissociated carbonic acid molecule are not reducible. The reduction only takes place at those electrodes at which hydrogen is discharged at a considerable over-voltage, and the product of reduction is formic acid.

WE have received a copy of the report and recommendations presented to the Pharmacopœia Committee of the General Medical Council by Prof. Wyndham R. Dunstan and Mr. H. H. Robinson with reference to the tests for the detection of arsenic in the drugs of the British Pharmacopœia. It is found that the test proposed by Mayençon and Bergeret in 1874, if performed under certain conditions, is best adapted to the purpose. This test depends on the production by arseniuretted hydrogen of a stain on paper soaked in mercuric chloride. The method possesses the advantage of requiring only such a degree of purity in the acid and zinc as is to be found in purchaseable materials, and thus avoids the special purifications involved in the Marsh-Berzelius test. The stain decided on as the standard of comparison is that given by 0.012 milligram of arsenic.

OUR ASTRONOMICAL COLUMN.

RE-DISCOVERY OF ENCKE'S COMET.—A telegram from the Kiel Centralstelle announces the re-discovery of Encke's comet at the Koenigstuhl on September 11. The position of the comet at 13h. 16.9m. (local M.T.) was

$$R.A. = 1h. 46m. 16s., \text{ dec. } = +25^{\circ} 24'.$$

These positions seem to be very slightly lower than the apparent positions given in the ephemeris reproduced in these columns on September 8. As this is the second comet of this year, it will be designated 1904 b.

DR. COMMON'S 60-INCH REFLECTOR.—In *Circular* No. 83 of the Harvard College Observatory, Prof. E. C. Pickering announces that, thanks to the generosity of an anonymous donor, who, unconditionally, gave twenty thousand dollars to the observatory, and to the intermediary services of Prof. Turner, the observatory has been able to purchase the well known 60-inch mirror which was made by the late Dr. Common.

Arrangements are being made to transport the mirror to Cambridge (Mass.) as soon as possible, and, when mounted, it will be used to complete the photometric survey of the heavens which has been so thoroughly—so far as means would permit—prosecuted at Harvard. With an instrument of this aperture it will be possible to measure the light of the very faintest stars known.

Prof. Pickering states that Mr. T. A. Common, from whom the mirror was purchased, let them have it on such favourable terms that he may fairly be regarded as having contributed a large portion of the cost.

VARIABLE STARS IN THE LARGE MAGELLANIC CLOUD.—Although the Magellanic clouds have been looked upon as centres of extraordinary physical conditions, the congregation of variable stars within their limits has hitherto remained unnoticed.

In *Circular* No. 79 of the Harvard College Observatory, however, it was announced that an examination of the Harvard photographs showed that the small cloud contained numerous variables. Consequently, an examination of the photographs of the large cloud was made, and resulted in the discovery of 152 new variable stars within its boundaries. A catalogue of these, giving their positions (for 1900.0), their magnitudes, and the magnitude-range of their light-variations, is published in No. 82 of the Harvard College Observatory *Circulars*.

All these variables have short periods, and seem to be arranged in definite groups, the most remarkable of which begins near N.G.C. 1850, and extends towards a point about one degree south of N.G.C. 2070. This group contains more than half the stars observed, and the included stars are remarkable for their faintness and for the small range of their variations.

THE SUN'S ANTI-APEX.—Mr. J. E. Gore sends the following remarks upon Prof. Kobold's study of the sun's proper motion, mentioned in last week's *NATURE* (p. 459):—"Prof. Kobold gives the position $A = 159^{\circ}.6$, $D = -54^{\circ}.7$, or R.A. 10h. 38.4m., $\delta = -54^{\circ}.7$, and says the point is near α Argus. (His words are, 'Der berechnete Punkt liegt am Himmel ganz in der Nähe von α Argus, der gegenüberliegende Punkt in der Nähe von δ Cephei,' *Astronomische Nachrichten*, 3961.)

"This is, however, not correct, for the position of α Argus (Canopus) is R.A. 6h. 21.8m., $\delta = -52^{\circ}.39'$ (1900). His statement that the 'opposite point' (the apex) lies near δ Cephei is, however, correct. The point found by Prof. Kobold for the anti-apex lies a little north of the famous variable star η Argus. This point lies in the Milky Way, as stated by Prof. Kobold. The fact that most of the determinations of the position of the solar apex lie in or near the Milky Way seems to suggest that the sun may be moving in an orbit 'nearly coinciding with the plane of the Milky Way.' This was pointed out by Mr. G. C. Bompas in the *Observatory*, January, 1896."

OBSERVATIONS OF THE SOLAR SURFACE, JANUARY-MARCH.—M. Guillaume, director of the Lyons Observatory, communicated a *résumé* of his observations of the solar surface during the first three months of the present year to the Paris Academy of Sciences on August 1.

The total spotted area was less than half the amount for the previous trimestre, the observed values being 2572 and 5430 millionths respectively. This was not due, however, to the absence of spots, for the phenomena have decidedly entered upon a period of increasing activity; the solar disc has not been free of spots since September 21.

In the preceding cycle the present condition of activity obtained 1.6 years after the minimum of 1889; in the present cycle 2.0 years have elapsed since that of 1901.

During the period under discussion 77 groups of faculae with a total area of 86.0 thousandths were recorded, instead of 64 groups and 66.0 thousandths as recorded in the previous trimestre. The faculae were also less symmetrically arranged in regard to latitude, there being 35 groups in the southern hemisphere and 42 in the northern in place of 33 and 31 respectively (*Comptes rendus*, No. 5).

INSTRUCTIONS TO VARIABLE STAR OBSERVERS.—At a meeting of the Société astronomique de France held in 1900 it was decided to form a section for the observation of visual variable stars, and for the organisation of the section a committee was formed.

This committee now publishes, in the September *Bulletin* of the society, the first chapter of a set of very detailed instructions to variable star observers.

This first instalment contains a list of stars which are especially suitable for observations of the nature proposed, minute instructions as to the methods of observing and of recording and reducing the results, and many other hints which will be found extremely useful by anyone engaged in making visual observations of variable stars.

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OBSERVATIONS OF FUNDAMENTAL STARS.—In the catalogue of 2798 zodiacal stars published by Sir David Gill in 1899, 210 of the objects named were designated "fundamental stars," but the places of only about two-thirds of these were given in Newcomb's fundamental star catalogue for 1900.

To facilitate the work of other observers, Mr. R. H. Tucker, of Lick Observatory, has just published the observed places of the remaining third in No. 3965 of the *Astronomische Nachrichten*. He gives the designation, the magnitude, the observed positions (reduced to 1900), the precessional values, and, in some cases, the proper motion in each coordinate of all the stars which are given in the zodiacal catalogue but are not mentioned in Newcomb's catalogue.

THE BRITISH ASSOCIATION.

SECTION K.

SUBSECTION, AGRICULTURE.

OPENING ADDRESS BY WILLIAM SOMERVILLE, M.A., D.Sc., D.CEC., CHAIRMAN OF THE SUBSECTION.

The audience that I have to-day the honour of addressing may be assumed to consist of a considerable proportion of the members of the British Association, and some others, who are primarily interested in, and have themselves made appreciable contributions to, the progress of Agricultural Science. I may, therefore, take the opportunity of congratulating you on this fresh evidence of progress in the subject that you have at heart, and of offering to the British Association our thanks for the encouragement and stimulus which are associated with the formation of an agricultural subsection. Perhaps I rightly interpret your feelings when I say that for the present we are satisfied with the position attained by our subject, but that we trust to see this and other meetings demonstrating that Agricultural Science is not unworthy of further advancement.

In view of the large amount of work that lies before us during the next few days, I do not propose to intervene for long between you and the contributions to original research which we have been promised. The scope of my remarks will be limited no less by time than by the fact that it would be presumptuous in me to attempt to traverse the whole field of Agricultural Science, including, as it may be held to do, the no small compartments of Horticulture and Forestry. What I propose to do, therefore, is to confine myself to touching upon a few of the subjects that have recently been receiving attention at the hands of scientific investigators, especially abroad. I have purposely avoided discussing English work, partly because it may be assumed that we are all familiar with it, and partly because, where friends are concerned, selection is difficult.

Although Agriculture has only now been elevated to a position of semi-independence in the programme of this Association, it has, in the aggregate, received much attention at the meetings inaugurated with that at York in 1831. It is interesting to turn up the early volumes of the Reports, and to ascertain what was running in the minds of our predecessors, and what the problems that they thought it vital to solve. In the account of the first meeting in this town in 1833 we find a Report by Lindley on the Philosophy of Botany, two of the items in which are of interest to students of Rural Economy. Apparently at that time much attention was being given to the mode of the formation of wood. Two theories appear to have divided botanists—the one that wood was organised in the leaves, and sent down the stem in the form of embryonic but organised fibres, to be deposited on the surface of wood already formed. The other theory was that wood was secreted *in situ* by the bark and older wood. It is to the former of these theories that Lindley gives his adherence. Although this problem has ceased to interest, the same cannot be said of another subject discussed in the same Report, namely, the so-called "faecal excretions" of plants. In the words of Lindley, "A new apple orchard cannot be made to succeed on the site of an old apple orchard unless some years intervene between the destruction of the one and the planting of the other; in